Detection of laryngeal cancer - the case for early specialist assessment

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Summary

The first 300 patients referred from 11 participating general practices (GPs) to the Hoarse Voice Clinic, Queen Elizabeth Hospital, Birmingham, were studied prospectively to estimate the accuracy of GPs' diagnosis of laryngeal symptoms and to assess whether the provision of a direct referral immediate access service for the assessment of persistent laryngeal symptoms is an effective way of ensuring early referral and detection of laryngeal cancer.

The GPs' assessment of laryngeal symptoms was inaccurate. Diagnosis after the initial clinic visit was accurate, predicting all histological cases of cancer. Laryngoscopy was possible in all patients at the first clinic visit. Disease requiring admission for direct laryngoscopy and biopsy was found in 39 patients (14%). Ten (3.3%) were found to have laryngeal cancer, of which eight were early lesions. When seen in the clinic 102 (34%) had normal voices and larynxes.

A hoarse voice is a symptom requiring specialist assessment. By using the flexible fibreoptic nasendoscope all patients larynxes can be seen in clinic, an accurate diagnosis quickly made and the appropriate management instigated. It is feasible to offer this service without appointments to patients with persistent hoarseness.

Introduction

Cancer of the larynx represents approximately 1% of all male malignancies in the UK[1]. It is less common in women though the incidence is rising, as the prevalence of smoking females increases[2]. The incidence varies geographically, with parts of Spain, France and Italy having an incidence greater than 10/100 000/year compared to the UK incidence of 4/100 000/year[3].

Survival in patients with laryngeal cancer is dependent on the stage and site of the tumour[3]. Cancer of the larynx does not readily metastasize to distant parts of the body and if local eradication of the disease is achieved then a permanent cure is very likely. Once the tumour has grown out of the larynx or has spread to regional nodes, local control and cure become increasingly difficult. The majority of early tumours can be treated successfully with radiotherapy with five year survival rates in excess of 75%[1]. Advanced tumours require radical and mutilating surgery and have a much poorer prognosis, with 5 year survival rates of 30% or lower[1].

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Most laryngeal cancers involve the vocal cords, so cause the noticeable symptom of hoarseness at an early stage. Early diagnosis is therefore feasible in most cases.

Patients and methods

Eleven general practices with a total list size of 83 200 participated in the study. They were asked to refer all patients with a hoarse voice for 4 weeks or more to a special Hoarse Voice Clinic held weekly at the Queen Elizabeth Hospital, Birmingham. Patients brought a brief questionnaire completed by their GPs and were seen on the day of attendance without an appointment. The general practitioners were asked to make a presumptive diagnosis between laryngeal cancer, vocal cord palsy, laryngitis and 'other'.

In the clinic a history was taken with particular reference to duration of symptoms, delay in consulting the general practitioner, and smoking habits. Examination included laryngoscopy using the flexible fibreoptic nasendoscope if required. The subsequent management of the patients depended on the findings, either admission for laryngoscopy and biopsy under general anaesthetic, further outpatient investigation, referral for speech therapy, or reassurance as appropriate. Data were recorded prospectively, separately and in addition to the normal hospital notes.

Results

During the 4 years from February 1986 to April 1991, 300 patients were referred by their GPs and 271 (90%) attended the Hoarse Voice Clinic. All patients' larynxes were seen on the first clinic visit.

Diagnosis and management after clinic laryngoscopy

All patients with discrete or otherwise suspicious lesions of the larynx (total 39) were admitted for direct laryngoscopy and biopsy under general anaesthetic. Table 1 shows the findings after initial assessment in the Hoarse Voice Clinic.

Of five patients with vocal cord palsies, two were found to have bronchial carcinoma. Five patients had laryngeal candidiasis secondary to inhaled steroid therapy and were treated with anti-fungal agents. Forty-five patients had 'functional dysphonia' without any visible laryngeal pathology and were referred for speech therapy. Seventy-five patients had only mild inflammation or oedema of the larynx which required no treatment other than encouragement to stop smoking if appropriate. One hundred and two patients had normal larynxes and normal voices at their clinic visit. These included patients whose symptoms had resolved and those with symptoms

Table 1. Diagnosis after clinic laryngoscopy

Diagnosis	*No. of patients*
Patients admitted for laryngoscopy under anaesthetic	
Probable laryngeal cancer	19
Vocal cord polyp	8
Vocal cord nodule	7
Vocal cord oedema	3
Laryngeal papilloma	1
Cancer of tongue	1
Total	39
Patients not admitted	
Normal larynx	86
Laryngitis	68
Functional dysphonia	45
Globus pharyngeus	15
Vocal cord oedema	7
Vocal cord palsy	5
Candidiasis	5
Cancer of oesophagus	1
Total	232

other than hoarseness such as dysphagia and globus pharyngeus.

Interestingly, no patient was prescribed antibiotics.

Diagnosis after direct laryngoscopy and biopsy

Thirty-nine patients were admitted for direct laryngoscopy and biopsy under general anaesthetic. Squamous cell carcinoma of the larynx was found in ten patients and dysplasia in a further three. All of those with cancer were current or past smokers. Though 40% of the study population were men, 80% of those with cancer were men. The findings after direct laryngoscopy and biopsy are detailed in Table 2.

Accuracy of diagnosis

The clinical diagnosis of each patient was recorded by the general practitioner before referral and by the hospital specialist at the Hoarse Voice Clinic. The GPs' diagnosis of laryngeal cancer was inaccurate. Of the 25 cases in which they diagnosed malignancy there were six cases of cancer. They did not diagnose malignancy in seven other cases of cancer or dysplasia. This gives a sensitivity and specificity of 46% and 24%, respectively. All vocal cord palsies were misdiagnosed by the GPs. The specialists' diagnosis after clinic laryngoscopy was accurate, correctly suspecting all cases of malignancy and dysplasia (sensitivity= 100%, specificity=65%).

Table 2. Diagnosis after direct laryngoscopy and biopsy

Diagnosis	*No. of patients*
Laryngeal cancer	
Stage T1 N0	3
T1 N1	1
T2 N0	4
T3 N0	1
T4 N2	1
Total	(10)
Dysplasia	3
Cancer of tongue	1
Inflammation	7
Other benign (polyp, cyst, oedema)	15
Normal biopsy	3
Total	(29)

Delay

The mean duration of symptoms before initial GP consultation was 14 weeks and the time between this consultation and attendance at the Hoarse Voice Clinic was 3 weeks. These times were not different for benign and malignant conditions.

Discussion

Direct referral endoscopy clinics for upper gastrointestinal (GI) symptoms have been tried and found to have success in the early diagnosis of gastric cancer and also a useful role in detecting non-malignant disease[4]. Similar direct referral arrangements for patients with haematuria and lower GI symptoms are being assessed in this hospital.

We identified the expected number of laryngeal cancers in the study population, 4/100 000/year. The incidence of advanced cancers (>=T3 N0) in our study was 0.6/100 000/year in our population (95% confidence limits 0 to 1.5/100 000/year). Because of the great difference in prognosis between early and advanced lesions even a slight reduction in the numbers presenting with advanced disease would be worth while. Power calculations suggest that to have an 80% chance of showing a halved incidence of advanced tumours would require a study of a population of 2.5 million person years, 7.5 times greater than the present study of 0.33 million patient years. To detect lesser reductions, or to be more certain of finding any difference, would require even larger studies. We doubt that a study of this order of magnitude will or should be undertaken.

This study confirms that the diagnosis of the cause of hoarseness without seeing the larynx is unreliable, and that clinic laryngoscopy is possible in all patients and is accurate. The advent of the flexible fibreoptic nasendoscope has revolutionized laryngoscopy. The procedure adds only two or three minutes to the clinical examination whereas previously many patients would have been admitted for direct laryngoscopy under general anaesthetic simply because an adequate view of the larynx was impossible in clinic.

Conclusions

Correct interpretation of persistent throat symptoms is of crucial importance, but the symptoms by themselves are not sufficient to make an accurate diagnosis. For this the larynx must be seen. Laryngoscopy, though a straightforward technique, requires the skills of an ear, nose and throat (ENT) specialist. The majority of hoarse patients can be reassured and appropriate treatment instigated at the first clinic visit within a short time of initial presentation to the GP using a direct access system.

Our dedicated clinic for patients with persistent hoarseness is a valuable exercise for the analysis of referral of patients with laryngeal symptoms, but it is not possible to show that the resources put into it lead to improved patient survival or quality of life. The recommended provision of ENT service is one

consultant per 100 000 population[5]. From our study, a consultant offering an 'open door' to GPs' patients with hoarseness for more than 4 weeks would expect about three such consultations per week, and to admit one such patient every 4 weeks. We think this is an acceptable commitment to ensure rapid and accurate diagnosis of these patients.

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Forthcoming events

(continued from p 377)

Principles of Colon and Rectal Surgery
29 September-1 October 1993, Minnesota, USA
Further details from: Dr S M Goldberg, CME, University of Minnesota Medical School, Radisson Hotel Metrodome, Suite 107, 615 Washington Avenue Southeast, Minneapolis, Minnesota 55414, USA (Tel: 612 626 7600; Fax: 612 626 7766)

Coronary Interventions
1-3 October 1993, California, USA
Further details from: (see entry for 20-24 July 1993)

18th International Symposium on Blood Transfusion
6-8 October 1993, Groningen, The Netherlands
Further details from: Symposium Secretariat, Red Cross Blood Bank Groningen-Drenthe, PO Box 1191, 9701 BD Groningen, The Netherlands (Tel: 50 137 777; Fax: 50 137 777)

Senior Registrars' & Registrars' Conference
11-15 October 1993, London, UK
Further details from: (see entry for 9 June 1993)

Diagnostic Approaches to Lymphoproliferative Disorders
15-19 October 1993, California, USA
Further details from: (see entry for 20-24 July 1993)

MRCP Part II Course
18-22 October 1993, London
Further details from: (see entry for 5-11 June 1993

Hygiene and Health Management in the Working Environment
20-22 October 1993, Ghent, Belgium
Further details from: Ms R Peys, c/o TI-K VIV, Desguinlei 214, B-2018 Antwerp, Belgium
(Tel: 216 09 96; Fax: 216 06 89)

Second-stage, Filtering in Vision
29 October 1993, London
Further details from: (see entry for 21 May 1993)

Intrapartum Fetal Surveillance
4 November 1993, London, UK
Further details from: (see entry for 8 April 1993)

5th Annual Conference Society for Minimally Invasive Therapy
5-7 November 1993, Orlando, USA
Further details from: (see entry for 20-24 July 1993)

Infertility Update VII
6 November 1993, California, USA
Further details from: (see entry for 20-24 July 1993)

Chemotherapy Foundation Symposium XI
10-12 November 1993, New York, USA
Further details from: Ms J Silverman, Division of Medical Oncology, Box 1178, Mount Sinai School of Medicine, 1 Gustave Levy Place, New York NY 10029, USA
(Tel: 212 241 6772; Fax: 212 996 5787)

Registration of Pharmaceuticals in Europe
15-17 November 1993, Switzerland
Further details from: (see entry for 13-14 May 1993)

Forum on RCOG Sponsorship Scheme
25 November 1993, London, UK
Further details from: (see entry for 8 April 1993)